

# MARINE REVIEW.

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No. 23.

## "Columbia, the Gem of the Ocean."

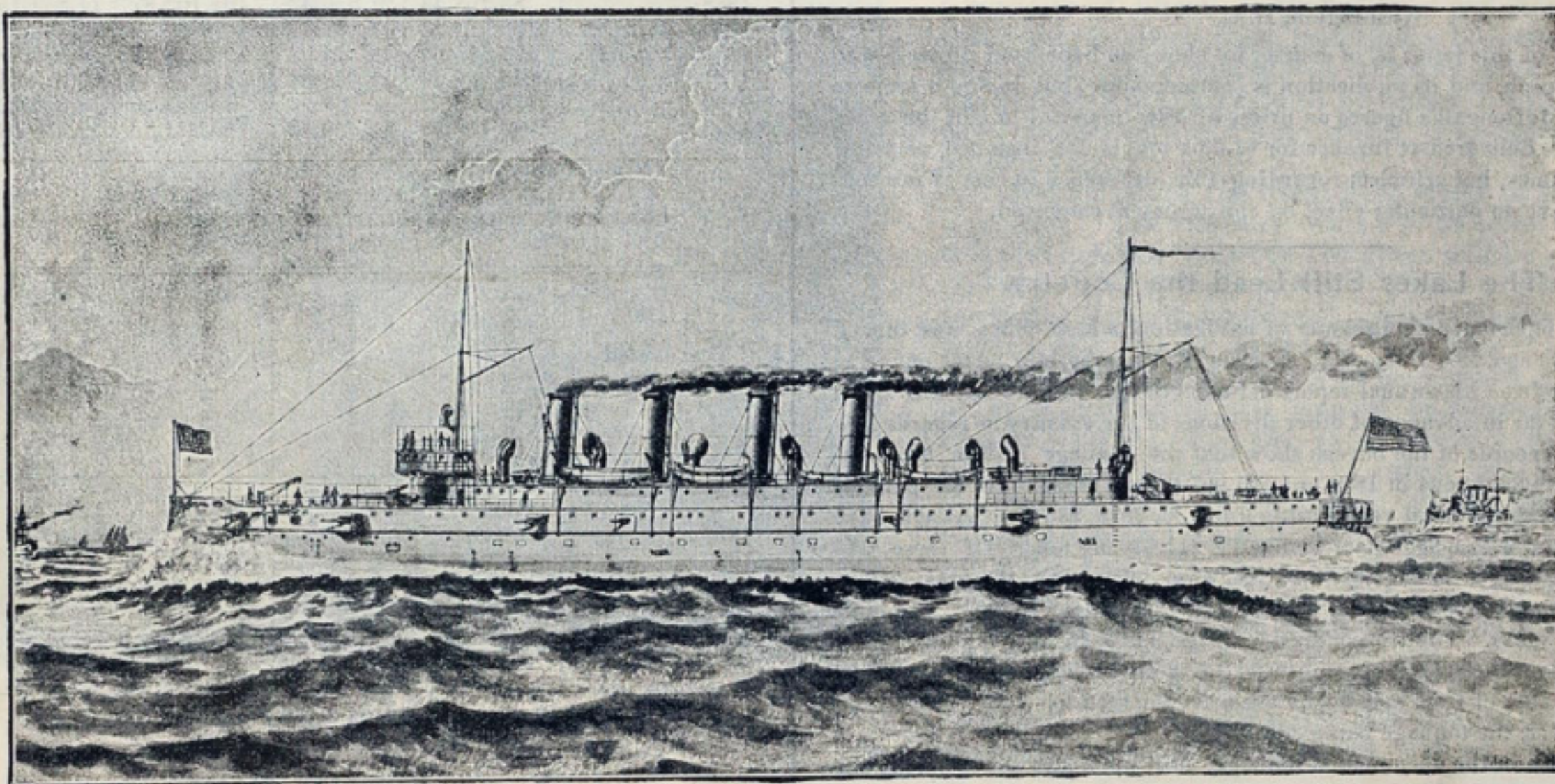
Although the REVIEW lays no claim to giving special attention to reading matter pertaining to vessels of war, our readers will very probably appreciate an engraving on this page of the new United States triple-screw war ship Columbia, the fastest big war ship afloat, especially as the drawing from which the cut was prepared was made for use in this journal. The term "fastest big war ship" is used for the reason that smaller ships, with higher engine power in proportion to displacement than the Columbia, have been built. The Japanese cruiser Yoshino has a displacement of 4,000 tons and horse power 15,000, or 3.75 horse power per ton. Her mean speed on the official trial was 23.031 knots, against the Columbia's speed record of 22.81 knots. The Columbia is higher engined than any ship afloat of her size, but not the fleetest. Her displacement is 7,350 tons, with 22,000 horse power, or 3 horse power per ton of displacement. The two new Cunard ships Campania and Lucania, built to serve as

steamers of the Minnesota company, which controls the mines, railway and docks, as well as the vessels. The first shipment of ore for the season was in the steamer Marina, May 12, and the last cargo was taken out by the Maritana on Nov. 24, making the season of shipments 196 days. Following is the ore record of the Minnesota fleet:

	Number of trips.	Gross tons carried.	Av. cargo gross tons.
Mariposa.....	25	70,693	2824
Maritana.....	26	75,143	2890
Marina.....	24	52,894	2204
Matoa.....	24	52,602	2192
Mariska.....	24	53,233	2218
Masaba.....	23	51,915	2257
Manola.....	23	51,519	2240
Maruba.....	26	57,579	2215

Total, gross tons..... 465,578

When running up light the average time of these steamers is about a trip a week, but in a number of cases this season they took coal up. There were 432 clearances from the port of Two



UNITED STATES BATTLE SHIP COLUMBIA.

British war cruisers, are of 12,500 tons displacement and 30,000 horse power, with twin screws, showing  $2\frac{2}{3}$  horse power per ton of displacement. These boats have made the Atlantic voyage of nearly 3,000 miles at an average of 21.3 knots per hour. It would doubtless be impossible for the Columbia to make such a voyage at that rate.

The Columbia is 412 feet long on the load water line, 58 feet extreme beam and 22 feet  $6\frac{1}{2}$  inches normal draught. Her power consists of three three-cylinder vertical inverted triple expansion engines of the horse power named, and driving three screws, one on the middle line, as in single screw ships, and the other two under the counters, as in twin-screw vessels. The power is calculated to produce a speed of 21 knots an hour, but on the official trial she made a mean speed of 22.81 knots, thus netting for the fortunate builders, Messrs. Cramp of Philadelphia, the handsome bonus of \$350,000 above the contract price.

## Season's Record of the Minnesota Steamers.

Of 902,352 gross tons of ore shipped by lake from Two Harbors during 1893, 465,578 tons was carried by the eight steel

Harbors and the average cargo for all vessels was 2,070 tons. The average loading time for all vessels was five hours, and the best loading record was 2,089 tons in two hours. The great difference in the best loading record and the general average time is due to vessels being compelled to wait for portions of cargo, especially when billed for ores not in dock. The maximum cargo, 3,066 gross tons of Chandler ore, was taken out by the steamer Maritana July 29.

The telephone is now used by deep-water divers. A receiver and transmitter combined is affixed to the inside of the helmet near the diver's ear. By a slight turn of the head, he can speak into the 'phone, and he can hear readily from it at all times. Its value in deep sea work, for reporting progress or receiving instructions, is clear. Formerly the only communication was by a system of pulls at a cord.

Readers of the MARINE REVIEW can obtain free of charge a copy of the American Shipbuilder by addressing Bradley & Howell, 7 Coenties slip, New York, N. Y.



### Labor Cost in Ships.

Capt. Alex. McDougall has been giving Mr. E. C. O'Brien, ex-commissioner of navigation, some figures on the cost of building steel vessels in this country and in England. Mr. O'Brien's report, just issued, contains the following letter from the inventor of the whaleback type of vessels:

OFFICE OF AMERICAN STEEL BARGE COMPANY OF NEW YORK.  
WEST SUPERIOR, WIS., Aug. 28, 1893.

DEAR SIR:—In reply to yours of the 21st instant, the contract price of the steamer referred to, building for an English company under our patents was £24,000, or about \$117,000. Such a steamer built on the Atlantic coast of the United States to-day would cost about \$180,000. It would cost us to build her at our yard here about \$160,000, taking full advantage of the depression at the present time. This vessel, her hull, machinery and boilers, will weigh about 1,600 tons. The raw material to build that entire vessel would cost, on this side, at the present time less than \$12,000, all the rest being labor. The following figures will give you an idea of the cost of the raw material:

3,200 tons Bessemer ore at \$1.50 per ton, delivered at furnace... \$4,800  
2,000 tons coke, at \$3 per ton..... 6,000  
800 tons of limestone, at \$1 per ton..... 800  
20 tons manganese ore, at \$20 per ton..... 400  
\$12,000

This makes \$12,000 for the whole. Thus, you see the rest is all labor, and very little profit in the building of such a ship in this country. Trusting the above information may be of use to you in any manner you wish to apply it, I am,

Yours very truly,

ALEX. MCDUGALL,  
General Manager.

E. C. O'BRIEN, Esq.

Commissioner of Navigation,  
Washington, D. C.

The object of this letter is, of course, to show the benefits of protection to American shipping, and its publication is commendable, but it would seem as though Capt. McDougall's figures on prices of raw material might be criticised. Iron ore delivered at furnace for \$1.50 a ton is, for instance, very low even in these times, but criticism regarding this difference in cost of raw material would have no particular effect on the argument conveyed.

### The Lakes Still Lead the Country.

Mr. E. C. O'Brien, commissioner of navigation, whose office was turned over, a few days ago, to a Democrat, Eugene R. Chamberlain, gave out some advance matter from his annual report before retiring, and the statistics again place the lakes far in advance of other divisions of the country as regards new tonnage. The records of the bureau show that the tonnage of the lakes increased from 711,269\* tons in 1882 to 1,261,067 tons in 1893. In all parts of the country during the fiscal year ending June 30, 1893, 956 new vessels have been documented whose aggregate tonnage is 211,639.35 tons. Of these, 175 vessels, representing a tonnage of 99,271.24, were built upon the great lakes. Thirty-five of these, measuring 62,825.22 tons, were of iron or steel, also built upon the great lakes. The iron or steel tonnage built in the United States elsewhere than on the great lakes embraced thirty vessels, aggregating 31,706.82 tons. The number of iron and steel vessels documented on June 30, 1893, on the lakes was 172, the tonnage being 265,727.

The increase in the documented tonnage built upon the lakes during the past year as compared with that of the previous year was 53,302. The number of vessels documented in the various customs districts on the northern lakes at the end of the fiscal year was 3,761, and the tonnage was 1,261,067. Of this number, 1,205 vessels, of 317,789 tons, were sailing craft, 1,731 vessels, of 828,702 tons, were steamers, and the residue, consisting of 825 vessels reported, of 114,576 tons, were canal boats, barges, etc.

Four hundred and ninety-three sailing vessels, measuring 49,348 tons, and 380 steam vessels, measuring 134,367 tons, were built and documented in all parts of the country during the last fiscal year; also twenty-eight canal boats, measuring 3,791 tons, and fifty-five barges, measuring 24,132 tons. The number and tonnage of vessels composing the merchant marine of the United States, as compared with the preceding year, is as follows:

Year ended June 30—	Number of vessels.	Tonnage.
1892.....	24,383	4,764,921.20
1893.....	24,512	4,825,071.05

This shows an increase of 129 vessels, and an increase of tonnage of 60,149.85 tons during the last fiscal year. Other tables published herewith are of interest as showing the growth of domestic commerce and ship building for domestic commerce, but a large part of the report is as usual devoted to data showing the decadence of American shipping engaged in our foreign commerce. Tonnage owned by Americans and employed in foreign commerce continues on the decline. In 1860 the amount of tonnage thus engaged was

2,379,396; in 1870, 1,448,846; 1880, 1,314,402; 1890, 928,062; 1891, 988,719; 1892, 977,624; 1893, 883,199.

DOCUMENTED VESSELS OF THE UNITED STATES BY GEOGRAPHICAL DIVISIONS.

Year ended June 30.	Atlantic and Gulf coasts.	Great lakes.	Pacific coast.	Western rivers.	Total.
	Tons.	Tons.	Tons.	Tons.	Tons.
1870.....	2,973,198	684,705	190,398	398,206	4,246,507
1880.....	2,716,779	605,102	272,361	473,792	4,068,034
1890.....	2,638,595	1,063,034	428,392	294,446	4,424,497
1891.....	2,780,683	1,154,870	440,858	308,348	4,684,759
1892.....	2,805,916	1,183,582	464,620	310,803	4,764,921
1893.....	2,807,690	1,261,067	457,422	298,892	4,825,071

TONNAGE OF VESSELS BUILT IN THE UNITED STATES EACH YEAR SINCE 1884.

Year ended June 30.	Atlantic and Gulf coasts.	Pacific coast.	Great lakes.	Western rivers.	Total.
1884.....	167,798.38	10,620.48	30,430.82	16,664.32	225,514.00
1885.....	109,971.82	11,037.67	26,826.33	11,220.37	159,056.19
1886.....	58,544.00	5,913.92	20,400.54	10,594.93	95,453.39
1887.....	73,921.17	9,139.61	56,488.32	10,900.93	150,450.03
1888.....	83,168.43	21,956.43	101,102.87	11,859.15	218,086.88
1889.....	93,912.24	17,939.43	107,080.30	12,202.36	231,134.33
1890.....	156,755.99	12,334.92	108,525.87	16,505.98	294,122.76
1891.....	218,392.46	19,069.84	111,856.45	19,983.54	369,302.29
1892.....	118,093.62	20,769.93	45,968.98	14,800.52	199,633.05
1893.....	89,108.69	13,720.89	99,271.24	9,538.53	211,639.35

TONNAGE OF SAILING VESSELS, STEAM VESSELS, CANAL BOATS AND BARGES, COMPRISING THE MERCHANT MARINE OF THE UNITED STATES FROM 1870 TO 1893.

Year ended June 30.	Sailing vessels.	Steam vessels.	Canal boats.	Barges.	Total.
	Tons.	Tons.	Tons.	Tons.	Tons.
1870.....	2,363,086.45	1,075,095.03	567,915.15	240,410.60	4,246,507.23
1880.....	2,366,258.03	1,211,558.35	106,589.57	383,628.61	4,068,034.56
1890.....	2,109,413.27	1,859,088.43	114,953.38	341,042.36	4,424,497.44
1891.....	2,171,737.07	2,016,263.82	120,999.91	375,758.14	4,684,758.94
1892.....	2,178,475.16	2,074,416.94	123,873.21	387,155.89	4,764,921.20
1893.....	2,118,196.47	2,183,271.90	126,279.20	397,323.48	4,825,071.05

\* Gross tons in all cases in this article.

### Kingston Notes.

Special Correspondence to the MARINE REVIEW.

KINGSTON, Ont., Dec. 7.—The building of boats here this winter will be confined to a barge for the Montreal Transportation Company, a tug for Calvin Company, Garden Island, and a steamer of 10,000 bushels capacity for A. W. Hepburn of Picton, Ont., for local business.

The two forwarding concerns handled during the season over 20,000,000 bushels of grain from western points, an amount much greater than in any recent year.

The steamer Bannockburn concluded her trips to Lake Superior on Saturday night. Since Sept. 9 she has made six trips and did not lose one hour save for a delay of five days by a break in the Welland canal. Had this not occurred, seven trips would have been her record. Her owners are greatly pleased with her performance.

### From Inspector Westcott.

EDITOR MARINE REVIEW:—Referring to the several so-called interviews with me in relation to the Albany-Philadelphia collision case, that have reached the columns of various newspapers, I would respectfully state that they have been published without regard to the facts in the case, and that no such interviews have taken place. As the articles in question are misleading and might do injury to innocent persons, I would request that you give this notice space in the columns of your paper.

C. H. WESTCOTT,

Detroit, Mich., Nov. 29, 1893. Supervising Inspector Eighth District.

British charts of Lake Superior cover the entire north shore. \$1.



### Canadian Sault Canal.

With completion of the masonry work in the lock pit of the new canal at Sault Ste Marie, Ont., Canadian newspapers are claiming that this big work will be completed in July next, nearly two years ahead of the opening of the new lock of the United States canal in St. Mary's river. The time fixed by Gen. Poe for the passage of vessels through the new United States lock is the spring of 1896, and appropriations must not be delayed if the opening is to be assured for that time. It is to be hoped that the claims of the people of the dominion will be carried out, as the opening of the Canadian canal next season would at least remove the danger of a great loss to shipping in event of an accident to the single lock now in operation. In other respects it will make little difference to the vessel interests whether the Canadian canal is open next year or not, as the increased draft of water would be of no avail without completion of the 20-foot channel work in St. Mary's river, which is not to be finished under contract any earlier than the United States canal lock.

The Canadian government has, however, shown great



CANADIAN SHIP CANAL AT SAULT STE. MARIE.—STONECUTTERS' YARD.



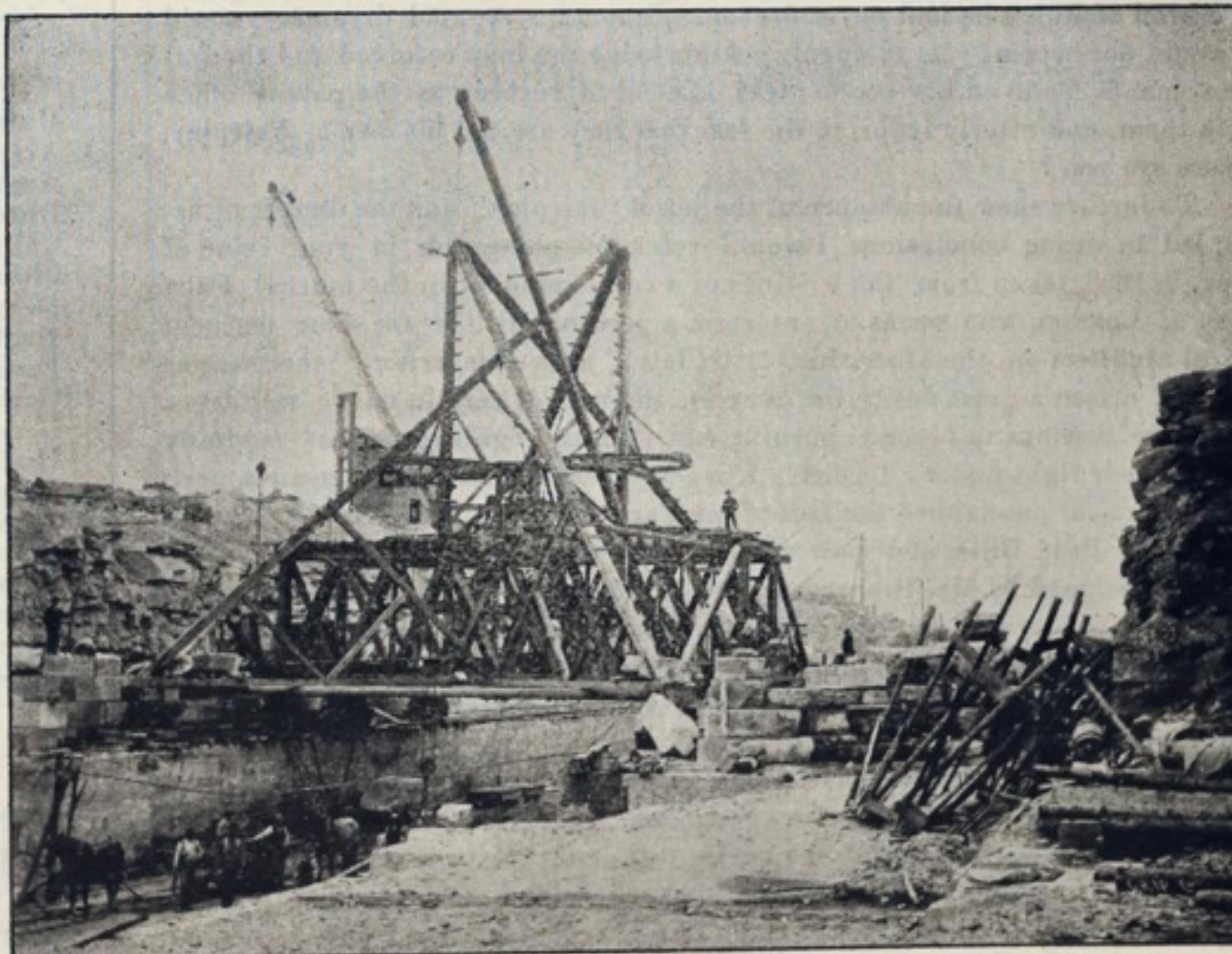
CANADIAN SHIP CANAL AT SAULT STE. MARIE.—PUMPING PLANT AND TRAVELING DERRICK.

pumping, stone crushing and other purposes. The cable, operated by the water power, runs the air compressor as well as the pumping engine, which keeps the big ditch dry, and also transmits power to a stone crusher 1,300 feet away. There are two stone crushers, one with a capacity of fifteen to thirty tons per hour, and the other able to crush from twenty-five to forty tons in the same time. The amount of crushing done depends on the hardness of the stone to be crushed—whether it is a hard boulder or a soft sand stone. The stone is crushed for concrete.

The length of the canal from water to water will be 3,700 feet. The masonry walls will be 1,106 feet on each side; the length between the gates will be 900 feet and the width of the lock 60 feet. There will be 21 feet of the water above the miter sill, taking the lowest recorded water level. There are to be three sets of gates at the eastern or lower end; one is to be a guard gate and will be used only when it is wanted to empty the lock for repairs. Of the other two gates, one is a spare set to be used in case of accident to the other, which will be the outer gate and in constant use. At the west end there will be a main gate and a guard gate. The width of the walls will be 11 feet at the top and 20 feet at the bottom, but there will be a uniform width around the gates of 25 feet carried the whole way up. There will be altogether 75,000 cubic yards of masonry in the work. The manner of opening and closing the gates is not yet determined, but it is most likely that electric motive power, generated from the water power, will be used.

determination in hurrying work on the canal at Ste. Marie, Ont., whatever may be said of the necessity of such haste. The project was begun in May, 1889, and now with the greater portion of the excavation and the masonry work on the lock pit completed, it is expected that enough can be done during the winter to warrant the opening of the canal next season. The views presented in connection with this article were taken some time ago, when more than 800 men were employed on the canal site and at the quarries from which the stone is taken, and are used with the permission of the Sault Ste Marie News. The dressed stone is quarried near Amherstburg, Ont., and is transported by vessel to the Sault. The backing stone comes from Meldrum bay, Manitoulin island. On the lock alone 25,000 cut stones costing \$15 to \$30 each were used. Traveling derricks for handling the stone are built on a truss reaching from one wall to the other and carried on a track of 48 feet 6 inches gauge. The walls on which these derricks rest are the walls of the culvert, the bottom of which is twelve feet below the bottom of the lock wall. They project below the lock-pit, thus making a channel under the basin or floor of the lock; a narrow channel will be used for culverts to convey the water into and out of the lock.

Water power to the extent of 1,000 horse power is used in a large part of the work of hoisting, drilling,



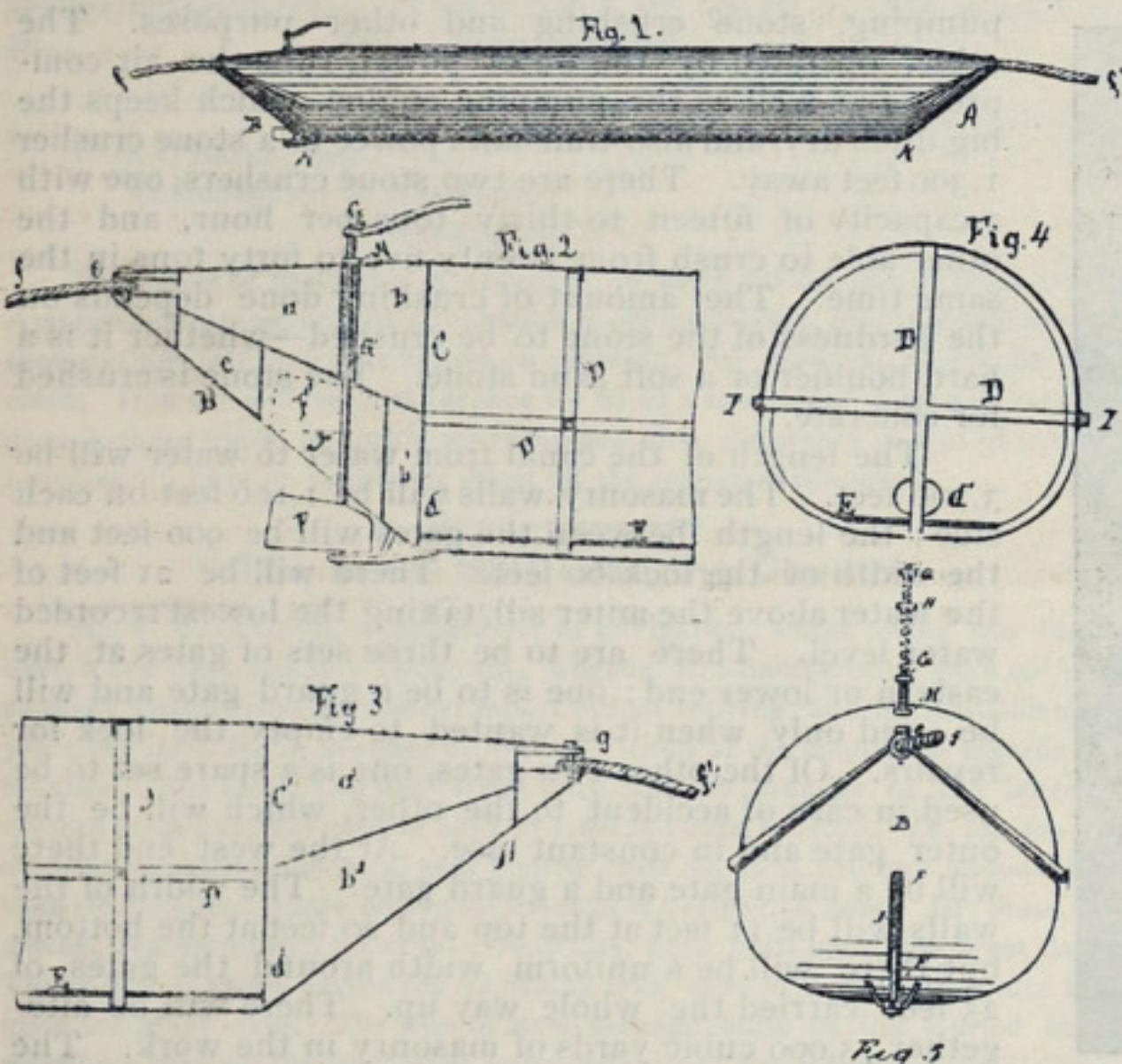
CANADIAN SHIP CANAL AT SAULT STE. MARIE.—VIEW OF MASONRY WORK.



### Some Sarcastic Comment on the "Pig."

Editor MARINE REVIEW:—Your correspondent, "The Man on the Dock," in concluding his remarks on whalebacks in your issue of Nov. 23, says: "I only desire to see fairplay. Give the 'pig' a chance." That is what I say too. "Fairplay is a jewel," and one that even a hog should have the privilege of wearing. How much more a man—even if he does not possess the "almighty dollar." I admire the way your correspondent stands up for the despised "pig" although he does not claim to be a whaleback champion, but I take exception to his style of speaking of the "father of whalebacks" as a ship builder. He says: "He stepped on nobody's toes,"—that, s doubtful—"but built the boats for himself and associates," which may be perfectly correct in the sense in which he speaks, but not absolutely so. The idea seems to have gone out that the "father of whalebacks," as your correspondent designates him, is actually a trained ship builder—at least he is often spoken of as such in the newspapers, both at home and abroad. Of course it would be uncharitable to accuse him of drawing grist of this sort to his mill. He never runs after notoriety? nor makes claims of any kind that are in the least doubtful? and on no account would he wear a cap that does not fit him.

Your correspondent further says: "Because a man conceived an idea that a certain type of vessel would present some advantages over another type, and had the faith in his invention to give it a practical test, I see no reason for anybody going to the trouble of misrepresenting him or his work." Neither do I, and there should be none. But suppose a man conceives ideas of something that he is not competent to produce, not being himself sufficiently skilled in the science and art of ship building, and after engaging someone to



help him out, he finds that his ideas are so crude and unpractical that they can not be worked out without radical modifications and changes of which he previously had no conception; suppose these modifications and changes were of a kind of which he had never dreamt—although a reputed dreamer—would it would not become him to openly acknowledge the help received and the improvements made on his crude ideas, instead of rushing to the patent office with them, and utterly ignoring the fact that they are not his own? Fairplay, where are you?

To further show the absence of the jewel "fairplay" and the danger of being led to wrong conclusions, I would refer to a paragraph in your issue of Nov. 9, 1893, taken from the writings of a correspondent in the journal Fairplay of London, who seems to entertain a personal dislike for some eminent naval architect on the other side. "Of late," says this writer, "there seems to have arisen a great desire for fame on the part of certain naval architects. They are anxious to become burning and shining lights instead of modestly hiding their light under a bushel. It is only a short time ago since an American periodical proclaimed the fact of the *Paris* and *New York* having been designed by Prof. Biles, and now we read of the *Campania* and *Lucania* being 'solely' designed by Mr. Richard Saxton White, and almost every week we read in the daily journals of some armor-clad or cruiser having been designed by Chief-constructor W. H. White, C. B. It does not follow, however, that two whites make a black, nor does it follow that these distinguished architects ever put a pencil to paper; indeed, in the majority of cases it will be found that the actual designer is some poor devil earning 40 to 50 shillings a week, who is far too modest to let the fact be known, and whose 'gift of gab' is not such as professors are endowed with. To be the 'designer' or 'sole designer' of such craft as the *Lucania* or *Par's* means a comprehensive knowledge of ship building, engineering, electricity, etc., and in all my wanderings I have not come across such a prodigy—and hope I never may."

Now this may appear very smart in the estimation of those who know no better, but in reality it is very misleading and erroneous, for the simple reason that the gentlemen in question are all well known in their profession, having "come in by the door," so to speak, and worked their way through all the elementary and initial stages of the business, thereby making themselves thoroughly qualified to dictate to those under them, and so actually be designers without themselves drawing a line or putting a pencil to paper. I think, however, that if what is said in this article regarding the claims of these professional gentlemen was applied to the so-called "father of whalebacks" truth would be much less distorted, and fair play advanced a step or two. And I am further quite satisfied that the whole passage to which attention is directed in referring to the entrance of those gentlemen by the "door of their profession" might be aptly applied to this same individual, as far as the science and art of ship building is concerned.

I wonder, Mr. Editor, if you or any of your readers or correspondents, either "on the dock" or "off the dock," have ever tried to account for the great difference that exists, both in model and construction, between the "old pig," the 101, and "her litter," the vessels that came after her. Or have you noticed how far short the 101 came of fulfilling the claims made by her inventor in his patent office specifications, published in your issue April 13. Please reprint with this communication the cuts used in your issue of April 13, and then note the following from the specifications: "The principal object of the invention is in the construction of the ends, by means of which the freight vessel is enabled to follow the wake or waterway of the towing boat with as little resistance as possible, the ends being so formed as to correspond to the disturbance of the water, both in entering and leaving the same. Most or all the boats or vessels now in use are so constructed that while being towed in either rough or smooth water they will deviate from one side to the other, if the rudder is not in constant use. By this improvement in the shape of both ends, and having the tow lines fast so far forward and aft in these vessels, we avoid this cause of sheering from one side to the other." To those of your readers who know anything of the character and conduct of the vessel referred to, it is needless to say more. Although carefully raised in his own pen, he having supervised the plans and having watched her development from day to day, which should be guarantee enough that she was a faithful reproduction, she proved to be the most obstinate old "pig" that ever moved. Pig-like, she went every way but the way she was pulled, utterly ignoring the use of the rudder, although it was no child's toy to play with, as those who handled it well know. And then, too, she kicked like a mule. She had to be hauled out and had her buttocks remodeled before she was two years old. But the end is not yet.

FAIRPLAY.

### Navies of the World.

According to the annual report of Secretary Herbert of the navy, made public a few days ago, nine vessels of 58,166 tons were launched during the year, and five others of 17,226 tons have been completed and commissioned. The following comparison is made between our own and other navies in the matter of vessels serviceable for war purposes:

	Battleships.	Armored cruisers.	Coast defence.	Protected cruisers.	Cruisers.	Torpedo boats.	Other un-armored.
United States .....	6	2	7 <sup>(*)</sup>	13	3	...	10
Argentina .....	1	...	4	3	...	...	19
Austria .....	7	3	3	6	12	...	40
Brazil .....	6	6	4	9	6 <sup>(†)</sup>	7	40
Chile .....	2	...	1	5	5	4	10
China .....	2	...	4	13	20	1	93
Denmark .....	1	1	7	5	1	...	34
England .....	44	22	18	63	69	39	326
France .....	29	19	26	36	30	14	457
Germany .....	14	(†)2	19	4	17	18	65
Greece .....	4	2	...	5	4	3	38
Holland .....	...	...	28	1	11	4	102
Italy .....	12	8	6	13	13	18	102
Japan .....	...	2	3	11	8	1	18
Portugal .....	...	4	1	...	6	...	56
Russia .....	15	11	29	1	28	12	118
Spain .....	1	7	5	6	15	11	92
Sweden and Norway .....	...	...	20	1	6	32	89
Turkey .....	9	8	4	4	7	37 <sup>(‡)</sup>	102

\* Including one harbor defence ram. † Gun vessels ‡ And marine trials.

As a naval power the United States now ranks seventh, but will, of course, advance in rank upon the completion of vessels under construction. We have sixty-four vessels unserviceable for war purposes, in which list are included the thirteen single turreted monitors, which "are in such a condition of deterioration as to be practically useless."



# Lake Carriers' Association.

M. A. BRADLEY, President.

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 Harvey D. Goulder, Counsel, Cleveland, O.

## APPROPRIATIONS RECOMMENDED FOR AIDS TO NAVIGATION.

In the last Congress the lakes secured larger appropriations for river and harbor improvements and for lights and fog signals than had been obtained from any previous Congress for a number of years past, notwithstanding the fear of a great retrenchment in government expenditures. Hard work on the part of the officers of the Lake Carriers' Association brought about liberal recognition where little was expected, and with the opening of the present Congress it is to be expected that this work will be continued. Some of the executive officers of the association are of the opinion that unless vessel owners enter with a proper spirit into legislative matters this winter there is danger of a failure or cutting down of appropriations, even on the continuous contracts for the Sault lock, Hay lake and 20-foot channel projects. Secretary Carlisle has recommended appropriations for a long list of aids to navigation, many of which have already been authorized, and energetic work will be required in support of the measure in which they are included. Among the lights and fog signals recommended for the lakes are the following: At Grassy point light station, Maumee river, \$2,000 for moving lights in addition to \$8,000 already appropriated; to establish a light station on South Bass island, Lake Erie, \$8,600; to establish a fog signal at Lorain, O., \$4,300; to establish a fog signal at Fairport Harbor, O., \$4,700; to establish a light station at Port Clinton, O., \$1,500, the old lighthouse to be used; for a light station at Gladstone, Mich., \$10,000; a light and fog station at Little Gull island, Mich., \$20,000; also one on the north end of North Manitou island, Mich., \$20,000; a steam fog signal at Pere Marquette station, Ludington, Mich., \$5,500; range lights and steam fog signal on Plum island, Mich., \$21,000; light and fog station on St. Martin's island, Mich., \$15,000; a steam signal on South Fox island, Mich., \$5,500; a light-ship with fog signal for Poe's reef, Straits of Mackinac, \$25,000; also one in vicinity of Hammond's bay, half way between Cheboygan and Presque Isle lights, Lake Huron, \$25,000; light on Round island, Lake Huron, \$15,000; a fog signal on North Pier of St. Joseph Harbor, Mich., \$5,000; also one at Eagle Harbor light station, Lake Superior, \$5,500; to re-establish the light station at Mendota, Mich., \$7,500; a fog signal at Portage Lake ship canal, pier headlight station, \$5,500; fog signal at Big Sable, Mich., \$5,500; to move Eagle river light station to Sand Hills, Mich., \$20,000; a light and fog signal at Grand Marais harbor of refuge, Lake Superior, \$15,000; a light and fog signal at Peshtigo shoal, Lake Michigan, \$10,000; a light station at Bayfield, Lake Superior, \$5,000; a fog signal at Manitowoc light station, Lake Michigan, \$5,500; also one at Sheboygan, Wis., \$5,500; a light station at entrance to Sturgeon Bay ship canal, \$20,000; to move the main La Pointe light and establish a harbor bell and light at Chequamagon point, Lake Superior, \$10,000; to build a permanent light and fog tower at Devil's island, \$22,000; to establish a light and fog signal at Hat point near Grand Portage, Lake Superior, \$15,000; a new beacon at each end of the range and keeper's dwelling at Maumee light station, \$15,000; to move and rebuild range lights in Sandusky bay, \$25,000; to establish a new light-house, keeper's dwelling and store house in Cleveland, \$25,000 and the proceeds of the sale of the old one; a light-house and fog signal on Pointe aux Barques, Lake Michigan, \$32,000.

R. J. Cram, dredging contractor who has been engaged during the past summer on section 1 of the 20-foot channel, which includes the shoals at the foot of Lake Superior, has already finished the work, and it has been found that a great advantage could be secured by an increase of about 200 feet in the width of the channel on which he has been engaged. The proposed increase contemplates the removal of the outer shoal to the southwest of the work done during the summer, or between the present channel and the can buoy. This is the rocky obstruction on which the big steel steamer Centurion brought up a short time ago, in an effort to make the present channel. This and other groundings during the past season should warrant the proposed widening of the channel, especially as it can be done under con-

ditions governing the original contract, if arrangements can be made before the contractor's plant is removed. Gen. Poe is understood to favor an extension of contract, and the matter has been referred to the legislative committee of the association, who will probably take action at their next meeting.

## Iron Ore Receipts and Stocks on Docks.

With complete returns from all managers of iron ore docks at Lake Erie ports, the usual statements of receipts of ore and the amount on dock Dec. 1 is herewith presented. The main features of the statistics are:

	1893, *Tons.	1892, Tons.
Receipts, Lake Erie ports, full season.....	5,333,061	6,660,734
On dock, Lake Erie ports, Dec. 1.....	4,070,710	4,149,451

These figures are by no means encouraging to the mining industry, nor the vessel owners whose interests are so closely allied to that industry. They show stocks of ore on dock practically equal to the total of a year ago, although the aggregate output of the Lake Superior mining region this season will be, lake and rail, a little less than 6,000,000 tons, against 9,074,243 tons in 1892, a reduction of 33½ per cent.

There is, however, one favorable feature in the report. It is evident that as the receipts at Lake Erie ports this season foot up 5,333,061 tons out of an approximate total of 5,800,000 tons shipped by lake from the mines, the lake shipments to Chicago and western points other than Lake Erie docks amount to only 466,939 tons. Last year the total lake shipments from the mines were 8,485,210 tons, of which 1,824,486 tons did not reach Lake Erie docks, but went to these western furnaces, which have only taken 466,939 tons this season.

On May 1 of this year the amount of ore carried over on Lake Erie docks was 2,095,797 tons. Add to this the season's receipts of 5,333,061 tons and we have a total of 7,428,858 tons; from which deduct 4,070,710 tons, the amount on dock Dec. 1, 1893, and we find 3,358,148 tons to be the amount shipped from Lake Erie docks to furnaces between May 1 and December 1, 1893. During the same period last year the shipments to furnaces aggregated 4,048,471 tons. During the season of 1891 the shipments to furnaces were 3,831,195 tons, and in 1890, 3,917,405 tons.

No effort has been made to give an exact statement of the lake shipments of iron ore from the different upper lake ports, on account of the refusal of the railway managers at Marquette and Escanaba to join in making such a statement public, but the aggregate is known to be between 5,800,000 and 5,900,000 tons, of which 902,353 tons was from Two Harbors, 1,117,520 tons from Ashland, 2,002,000 tons from Escanaba and the balance from Marquette, Duluth and Superior.

The following tables give in detail the receipts at Lake Erie ports during five years past and the amount on dock on Dec. 1 of each of these years:

### IRON ORE RECEIPTS AT LAKE ERIE PORTS.

PORTS.	1893.	1892.	1891.	1890.	1889.
Toledo.....	145,515	139,987	191,105	164,295	82,961
Sandusky.....	4,464	49,736	105,907	174,596	186,082
Huron.....	137,700	65,000	14,910	1,200	680
Lorain.....	165,667	190,400	266,009	280,450	280,000
Cleveland.....	1,260,716	1,950,224	1,257,775	1,945,492	1,742,415
Fairport.....	792,517	866,611	699,434	1,096,408	829,121
Ashtabula.....	1,845,738	2,555,416	1,599,785	2,176,730	1,963,490
Conneaut.....	203,207	1,130	.....	.....	.....
Erie.....	469,299	645,230	393,759	487,493	373,595
Buffalo†.....	308,238	197,000	410,000	548,000	298,000
Total.....	5,333,061	6,660,734	4,939,684	6,874,664	5,856,344

† Includes Tonawanda.

### IRON ORE ON DOCK, LAKE ERIE PORTS, DEC. 1.

PORTS.	1893.	1892.	1891.	1890.	1889.
Toledo.....	92,911	71,409	122,515	110,740	85,340
Sandusky.....	78,439	87,500	122,000	115,000	175,000
Huron.....	89,000	45,000	14,910	1,200	39
Lorain.....	201,632	147,600	250,812	210,237	170,000
Cleveland.....	1,163,930	1,347,992	1,114,762	1,209,467	518,816
Fairport.....	578,033	610,609	597,617	721,000	390,000
Ashtabula.....	1,296,431	1,312,658	903,957	1,151,397	1,071,011
Conneaut.....	91,337	.....	.....	.....	.....
Erie.....	359,827	401,683	252,916	248,714	128,900
Buffalo†.....	119,170	125,000	129,000	125,732	68,000
Total.....	4,070,710	4,149,451	3,508,489	2,893,487	3,607,106

\*Tons in all cases are gross tons of 2,240 pounds.

Shipments of anthracite coal out of Buffalo to Dec. 1 aggregated 2,626,033 net tons, against 2,813,680 tons on the same date in 1892. Comparing receipts of grain and flour at the same port to Dec. 1, there is found an increase of 583,880 barrels of flour, an increase of 9,010,632 bushels of all grain, and an increase of 10,247,131 bushels of grain and flour reduced to wheat.



# MARINE REVIEW.

DEVOTED TO THE LAKE MARINE AND KINDRED INTERESTS.

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## ST. MARY'S FALLS AND SUEZ CANAL TRAFFIC.

	St. Mary's Falls Canal.			Suez Canal.		
	1892.	1891.	1890.	1892.	1891.	1890.
No. vessel passages	12,580	10,191	10,557	3,559	4,207	3,389
Ton'ge, net regist'd	10,647,203	8,400,685	8,454,435	7,712,028	8,698,777	6,890,014
Days of navigation..	223	225	228	365	365	365

Entered at Cleveland Post Office as Second-class Mail Matter.

If lake vessel owners and ship builders entertained any fear of the passage of the Fithian free ship bill, they would undoubtedly be found ready to go to Washington to oppose the measure. They have already expressed themselves quite generally in plain language on the provisions of the bill, showing to the shipping interests of other parts of the country and to their representatives in Congress that they know this measure to be directed against vessels in the coastwise trade as much as against foreign commerce. They know that in accordance with constitutional rights no vessel can be admitted to United States registry without being accorded full privileges, that would result in foreign-built and foreign-owned vessels engaging in the coastwise trade after being admitted under this proposed law. With the great number of representatives in Congress from coast and lake states, there should be no danger of the passage of this measure, especially in the Senate, but further expression of firm and united opposition to it should be presented. The Lake Carriers' Association should adopt resolutions in opposition to it. It directly concerns their business and is not of a political character with them. The lake ship builders, with whom it is of vital importance, should also hold a meeting before the session of Congress is further advanced, and call upon their representatives for protection to the millions of capital that have gone into ship building plants here within a few years and to the army of skilled workmen, whose labor represents 90 per cent. of the cost of a steel ship.

CONDITIONS that have arisen in the iron ore business, through the opening up of vast deposits of high grade Bessemer ore on the Missabe range, are favorable to the proposed combination among vessel owners for the regulation of freight rates, and some of the projectors of the scheme for a minimum rate agreement are accordingly looking for support from certain iron ore companies that have acquired vessel property, if a meeting on the rate question can be brought about this winter. There is no denying the fact that, after shipping 600,000 tons of ore in its first year against great disadvantages, the Missabe is certain to drive out of business some of the largest ore companies on the older ranges, and thus make carrying companies out of some corporations that have made money enough in the mining business in years past to build their own boats. This may be considered a broad statement, but it is nevertheless true of a few companies, even as regards the season just closed. The names of such companies in Cleveland might be mentioned, but they are well known to everybody who has kept account of the change in conditions governing the ore business. From these vessel owners, whose mining interests formerly predominated, strong support may well be expected if the projectors of the rate combination get down to something more than the talk that has been indulged in during the past few weeks.

ALTHOUGH Mr. E. C. O'Brien, retiring commissioner of navigation, who has just been succeeded by Mr. Eugene R. Chamberlain, presents in his final report a great deal of sound argument favorable to protection for American shipping, the document is not of a political kind, but contains more general information about the merchant marine of this country than any similar report that has been sent out from Washington in many years. It has been prepared earlier than reports in the past, and in addition Mr. O'Brien has succeeded in getting the list of vessels of the United States (Blue Book) in print nearly six months in advance of its usual issue.

It is a pleasure to note that the light-house board in its annual report shows a determination to take up, on an extensive scale the work of establishing communication between light-ships, light-houses and the shore. Congress should not hesitate in making the appropriation of \$150,000 required for the first practical work of this kind. We are a little behind Great Britain in beginning this humane service, but with support from the shipping interests there is no doubt about early progress on the part of the naval officers to whom the duty would be entrusted.

YACHTSMEN will be interested in the annual report of the retiring commissioner of navigation, Mr. E. C. O'Brien, as it contains several pages of history regarding the America's cup, with tables giving details of all races since the famous trophy was offered by the Royal Yacht Squadron of England, May 9, 1851. A copy of the book can probably be obtained by addressing the present commissioner, Mr. Eugene R. Chamberlain.

"ON THE whole, the aggregate ship building capacity of the United States has multiplied about five times during the past decade," says Charles H. Cramp of Philadelphia in a letter to the United States commissioner of navigation.

WHEN all vessels are in port and there is no probability of further shifting of them, the REVIEW will present a full list of winter moorings, but the work will not be hurried, as the value of such a list lies mainly in its correctness.

## Stocks of Grain at Lake Ports.

The following table, prepared from reports of the Chicago board of trade, shows the stocks of wheat and corn in store at the principal points of accumulation on the lakes on Dec. 2, 1893:

	Wheat, bu.	Corn, bu.
Chicago .....	19,394,000	1,679,000
Duluth.....	7,979,000	.....
Milwaukee.....	840,000	.....
Detroit.....	1,449,000	24,000
Toledo.....	2,343,000	258,000
Buffalo.....	2,821,000	1,312,000
Total.....	35,426,000	3,273,000

At the points named there is a net increase for the week of 514,000 bushels of wheat and 646,000 bushels of corn.

## Early Lake Superior History.

A wealth of interesting story and incident attaches to the great lakes which began to be traversed by explorers some 225 years ago. All that remains to remind any one of it, since the transportation business has grown to surpass the water commerce of Liverpool and London, is the peculiar names of islands, rivers and straits, but even these excite little attention except to be abused by the way in which some are spelled. An inspection of different log books would, for instance, disclose a dozen ways of spelling Bois Blanc. It was in August of the year 1669 that Father Galinee, who was with LaSalle on his first journey, wrote: "We discovered Lake Ontario, like a great sea with no land beyond it." Louis Joliet who had been sent from



France to locate the Lake Superior copper mines, information of which had been given by the Indians, met the party near Hamilton, Ont. LaSalle left the priests there, to discover the Ohio river. The priests decided to camp for the winter at Long point, as Lake Erie was too boisterous for their small boat. They lived on wild nuts, grapes and game, and in the spring planted a cross on the point taking possession of the land for Louis XIV. Early in the spring they started west, reaching Point Pelee in such an exhausted condition that they were unable to drag their baggage far enough up on the beach and the waves washed it away with their altar service. They decided to proceed to the Sault and join the Ottawas in their yearly descent to Montreal. Proceeding up "the strait that joined Lake Huron to Lake Erie," near the present cite of Detroit they found a stone in the form of a man set up and daubed with paint. It was worshiped as a manitou by the Indians. The priests broke the idol, and lashing their canoes together carried the trunk to the center of the river and threw it overboard. They believed that the deed was rewarded by their killing a deer and a bear that day. This is the

firing of cannon, accompanied by wild hilarity of the French and drunken Indians. Five cannon pointed out her port holes and on her prow was carved a griffin. She was towed up the river and equipped at Black Rock, four men, stimulated by brandy, being required to carry the anchor up Lewiston heights. August 7, 1680, LaSalle and his followers embarked, singing TeDeum and firing cannon. A fresh breeze came on and "with swelling sails the Griffin ploughed the waters of Lake Erie, on which sail was never seen before." The fourth day out they turned into the strait of Detroit, going up which they saw herds of deer and flocks of swan and wild turkeys. A party following along the shore kept the bulwarks lined with game, several bears having been bagged. But Hennepin was mistaken when he said, "those who will one day have the happiness to possess this fertile strait will be very much obliged to those who have shown them the way." The small lake they passed through was named Lake Sainte Claire, corrupted to St. Clair now. On Lake Huron they encountered a furious tempest, and LaSalle called on his men to commend themselves to heaven. All fell to prayers ex-



MAP OF LAKE SUPERIOR PUBLISHED AT PARIS IN 1672.

first recorded passage of the Detroit river or strait of Detroit, although Joliet probably passed up a year before. They reached "Ste Marie du Saut" May 25, and found Marquette and a helper. On the return of this party the first map of Lake Superior was published, and while the map presented herewith was published about that time it is not thought to be the one prepared by Galinee and his party, as it contains more accurate information than they were thought to have possessed.

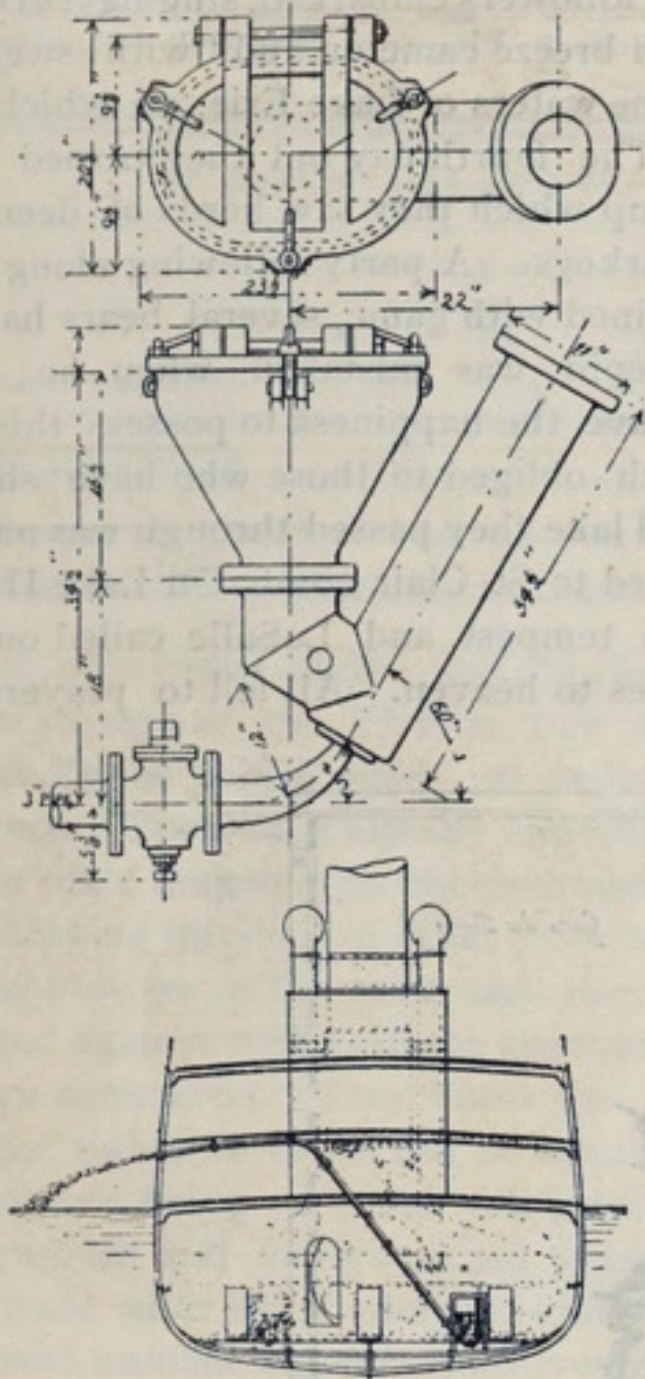
In connection with this an account of the building and the first voyage of the Griffin is given. She was commenced in 1679, two leagues above the cataract on Niagara river at the mouth of Cuyuga creek. Trees were felled and the master ship-builder, Moise Hillaret, set his men to work getting out the frames, while two Mohegan hunters built wigwams for the men. LaSalle asked Father Hennepin to drive the first bolt but he said that his modesty forbid. An Indian tried to stop the work by attempting to kill the blacksmith but he defended himself with a red hot iron. The vessel was about 45 tons burden and was launched in the spring of 1680, with the friar's blessing, and

cept the pilot, who complained that LaSalle had brought him to drown ignominiously on fresh water when he had won renown on the ocean. The storm ceased and the sun shone out on Bois Blanc, Mackinac and the distant Manitous. The Griffin came to anchor behind St. Ignace of Michillimackinac. They landed and marched to the bark chapel of the Ottawas, LaSalle kneeling before the altar in a robe of scarlet and gold. The Indians called the Griffin a floating fort and she was surrounded by hundreds of canoes. Early in September LaSalle set sail into Lac des Illinois, anchoring at Green bay entrance. He found an advance party who had collected considerable fur, which he decided to send back with the Griffin to satisfy creditors. Sept. 18 she set sail for Niagara with orders to return as soon as possible, LaSalle proceeding south with canoes. The only information of the Griffin afterwards was that given by a young Indian, who had seen a white man answering the description of the pilot, who had been captured with a lot of furs supposed to have been a part of the Griffin's cargo. LaSalle was satisfied that the boat had been wrecked by the pilot.



### See's Hydro-Pneumatic Ash Ejector.

We give herewith two engravings showing the application and construction of a hydro-pneumatic ash ejector, which has recently been designed and put upon the market by Mr. Horace See of No. 1 Broadway, New York. Considerable work attends



the removal of ashes from the fire room of steamers, and on passenger vessels there are disagreeable features present when the ashes are thrown overboard. This ash ejector does away with all the manual labor outside of the actual shoveling of the ashes from the fire room, and they are thrown overboard wet and mixed with water. The construction of the apparatus is exceedingly simple. The dimensions are all given on the drawings. The apparatus consists of a hopper with a strong cast-iron cover, which when not in use is kept closed. This hopper opens down into a large pipe inclined outward at an angle of about 60 degrees. In the bottom of this pipe there enters the nozzle of the ejector, which throws water under a pressure of about 160 pounds to the square inch, when the lift, from

the fire room floor to the discharge opening on the side of the steamer, is 20 feet. When the ash ejector is to be used a pressure of 160 pounds is obtained in the 3-inch pipe back of the plug cock. This is then suddenly opened and the water allowed to pass through the pipe until it is filled and the discharge overboard begins. Then the cover is removed from the hopper and the ashes simply shoveled in. They fall down, are caught by the stream and carried overboard. In order that there may be no clogging it is found necessary to admit some air with the stream of water. This is done by placing an air valve in the inclined pipe. Sometimes it is placed in the delivery pipe near the top of the hopper, and sometimes at the point marked by a circle in the engraving. The apparatus has been placed on a number of vessels, and among others on the steamship Lahn, of the North German Lloyd line. On this steamer about 135 tons of coal are burned a day, and the time required for getting rid of the ashes is 15 minutes for each watch. The apparatus, in addition to its simplicity, takes up with all its connections much less space than any of the old methods. It will raise ashes no matter what the draft of the vessel may be, and as fast as men can shovel them into the hopper. The drawings are reproduced from the American Engineer and Railroad Journal of New York.

### Around the Lakes.

Capt. James Webber, who sailed vessels out of Grand Haven for twenty years, died at that place Monday. He was forty-eight years of age.

One thousand feet of new dock equipped with Brown hoisting and conveying machinery will be constructed at Conneaut, Lake Erie, for next season.

Regular meetings of the different branches of the Shipmasters' Association will begin shortly. The Buffalo lodge will hold its first meeting Saturday.

Jaxon F. Pratton, ranking surfman at the world's fair life saving station, has been appointed keeper of the Milwaukee station to succeed Capt. Peterson, removed.

There is, of course, no truth in the report of work being suspended on the big passenger steamers building for the Northern Steamship Company at Cleveland. Work on the second boat has been advanced as far as it is possible to carry it on, before

removing the twin screw engines and great mass of boiler material from the machine shops, and securing a trial of the first boat, upon which certain features in the second steamer are depending.

With the Colonial, Lockwood and City of Cleveland, three badly crippled wooden steamers to repair, the Ship Owners' Dry Dock Company of Cleveland is provided with work that will run them during the greater part of the winter.

The whaleback steamer Samuel Mather and tow of three barges, which reached Duluth Monday after having gone through a succession of gales that kept them eighty three hours on Lake Superior, carried cargoes aggregating about 10,000 tons.

### Trade Notes.

The Penberthy Injector Company, Detroit, Mich., reports business improving, their November sales being nearly double that of October, and their factory running full time with a full force.

The American Shipmasters' Association of New York, publishers of the Record of American and Foreign Shipping, classed last week the ship St. Ignace and three-masted schooners Manuel R. Cuza, Margaret A. Roper and Sarah & Ellen.

Readers who have seen the American Shipbuilder quoted in these columns and are interested in reading a copy of this journal will be furnished with it free of charge if they will send their address to the MARINE REVIEW, Cleveland, O.

Engineers and owners in need of marine engines will be interested in a letter written to the Frontier Iron Works, Detroit, by C. H. Wilcox, engineer of the F. & P. M. steamer No. 5. It has been reproduced fac-simile and anyone sending their address to the Detroit firm will receive a copy.

Capt. McNeill writes that the steamer Thomas Cranage shows an improvement of one mile an hour with her new Sheriffs wheel. The steamer Progress, which also recently received a Sheriffs wheel, shows an improvement of two miles per hour light and one and one-half miles loaded.—Evening Wisconsin.

"We have given your steam steerer a very good trial and we are glad to say that we are in love with it, and it proves to be just what we wanted. We now have fifteen tugs in our line and want to put your steerer into six or eight more of them as soon as we can get around to it." The foregoing is a portion of a letter written by B. B. Inman, Duluth, Minn., to the Sheriffs Manufacturing Company, Milwaukee, Wis., concerning a trial of their new steerer. No comment is necessary.

Thos. Drein & Son, Wilmington, Del., have furnished recently life saving appliances for the following steamers: Four 16-foot patent beaded metallic life boats and two 12-foot life rafts for a New York steamer; boat, life preserver and buoy outfit for Reed island quarantine steamer; two boats and life raft for a South American steamer, building by Neafie & Levy, Philadelphia, Pa.; four 21-foot and two 20-foot life boats and two sea life rafts for the new Boston & Bangor steamer, and nine large life boats for vessels in different parts of the country. Lake shipbuilders would do well to place spring orders now and avoid the rush and delay that occurred last spring.

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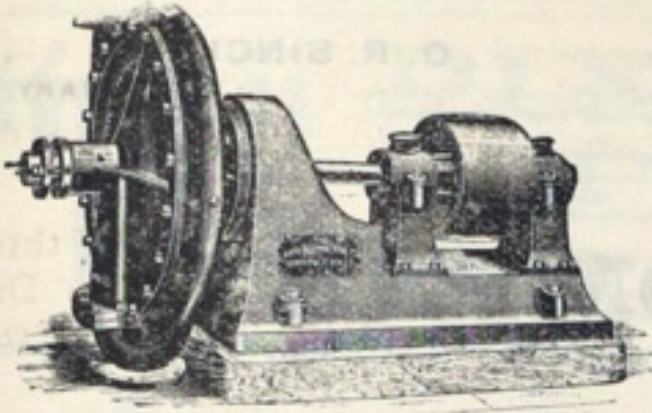
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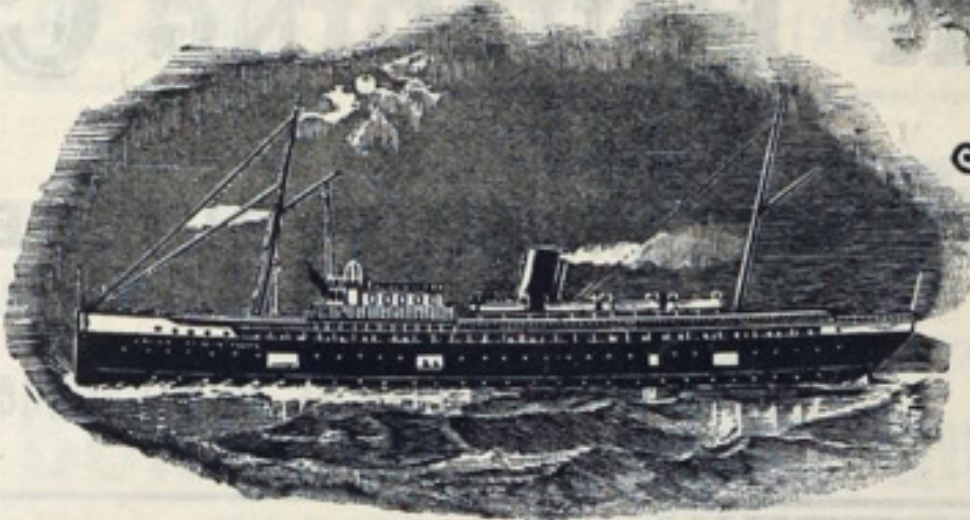
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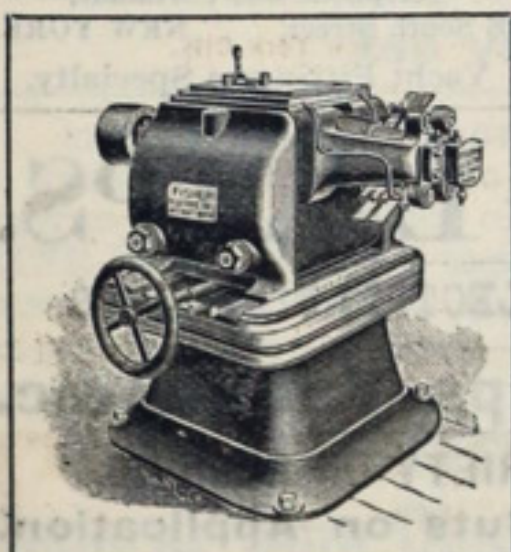
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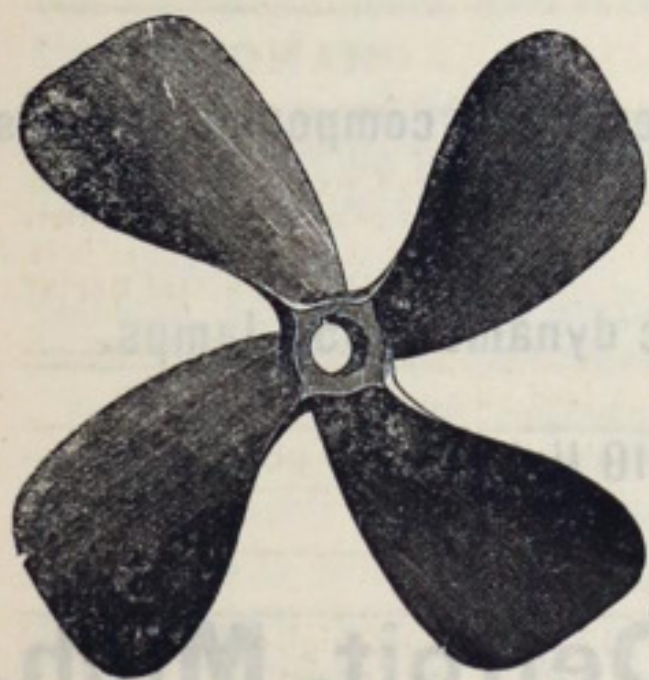
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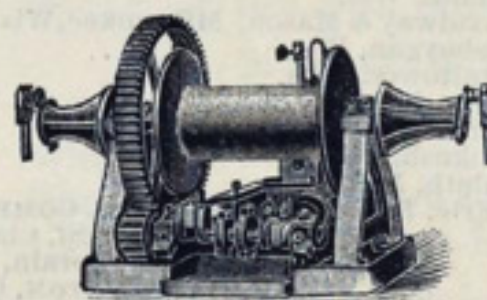
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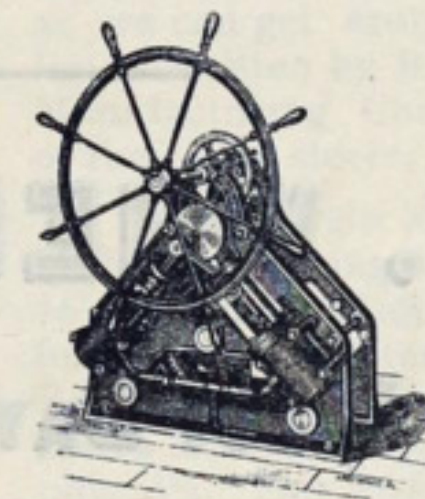
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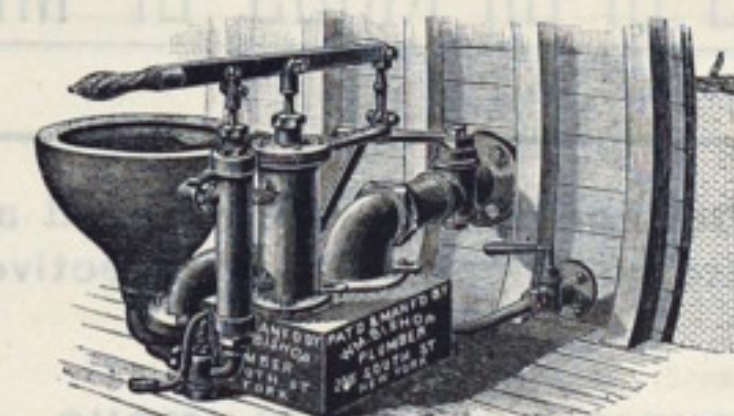
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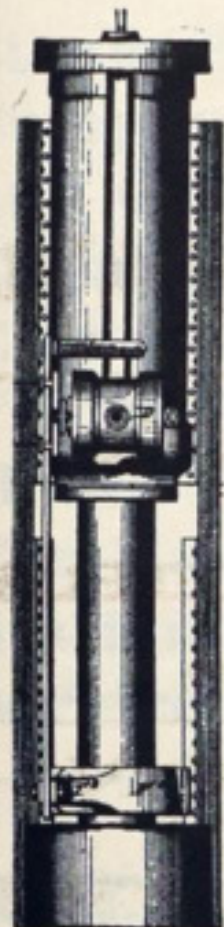
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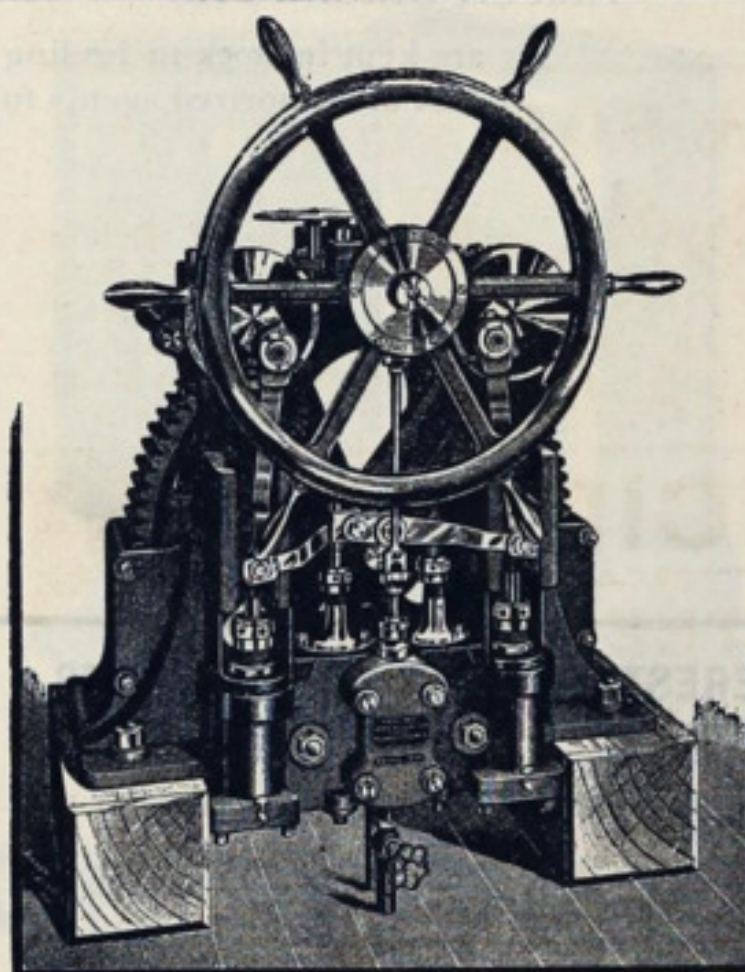
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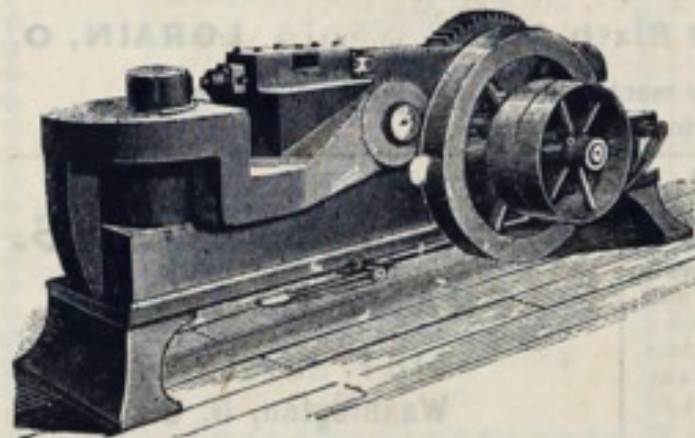
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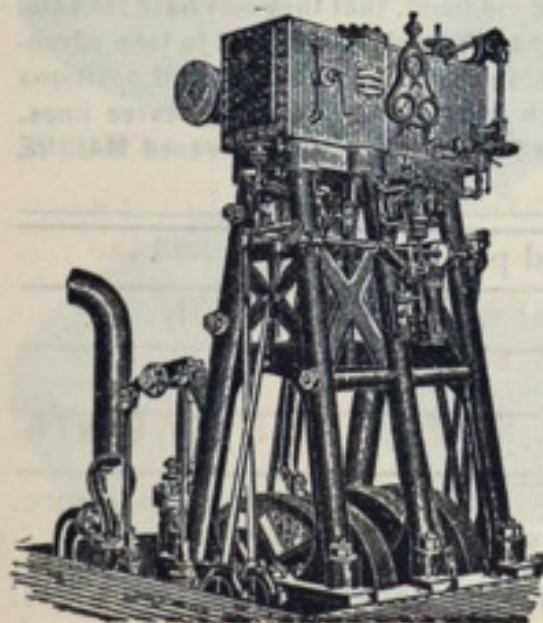
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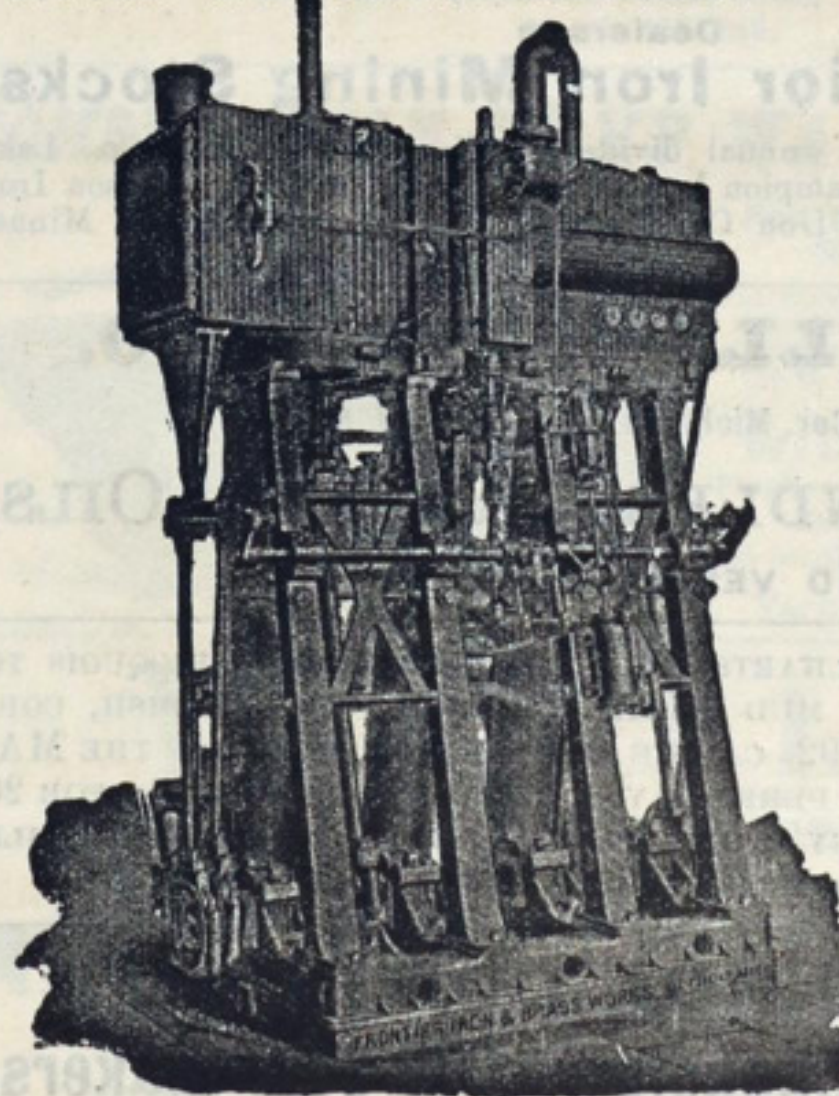
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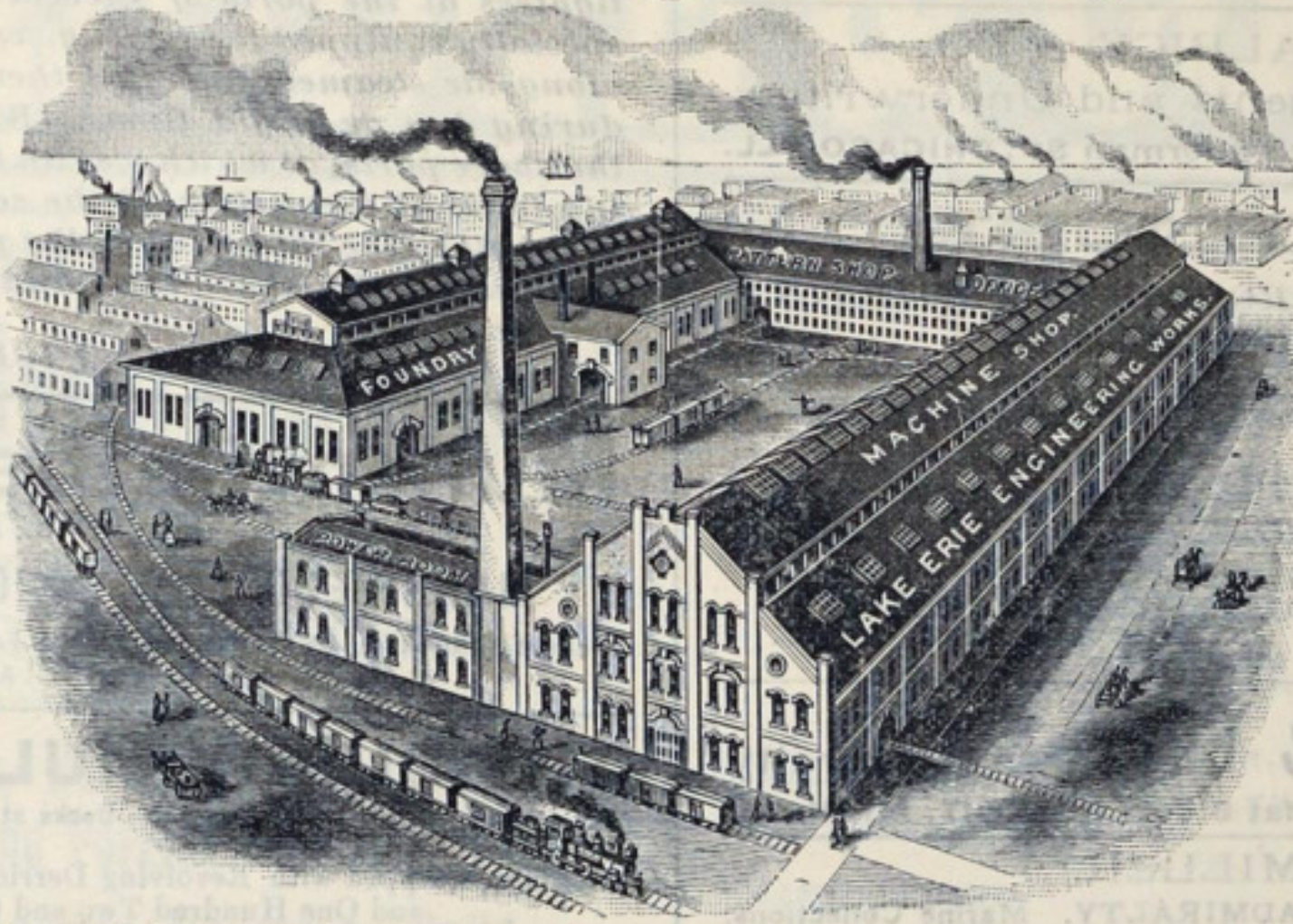


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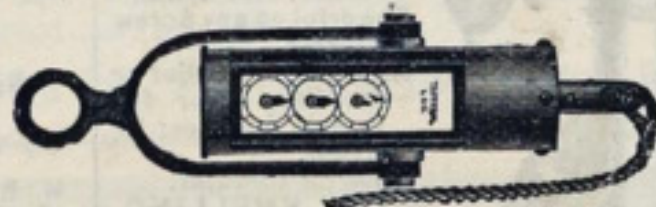
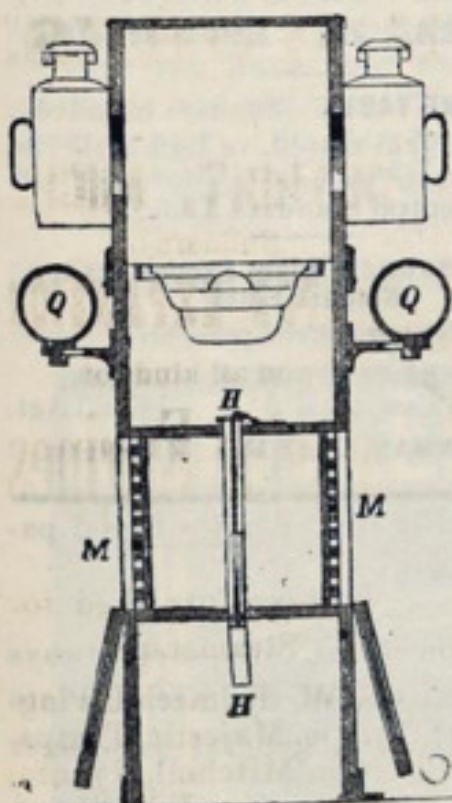
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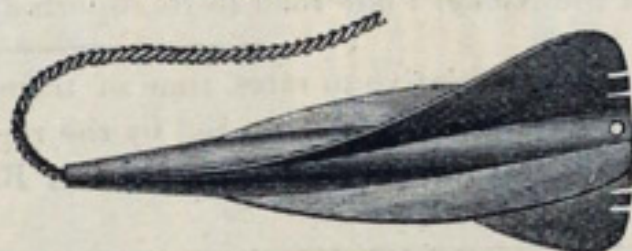
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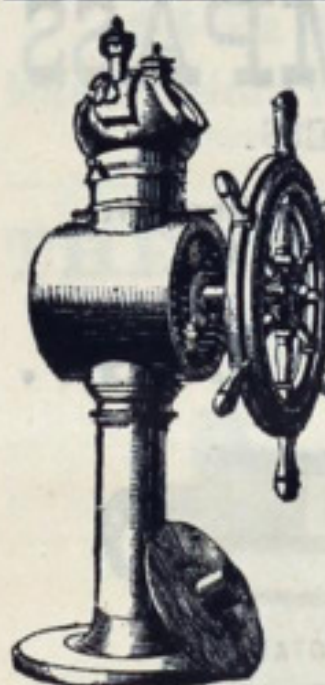
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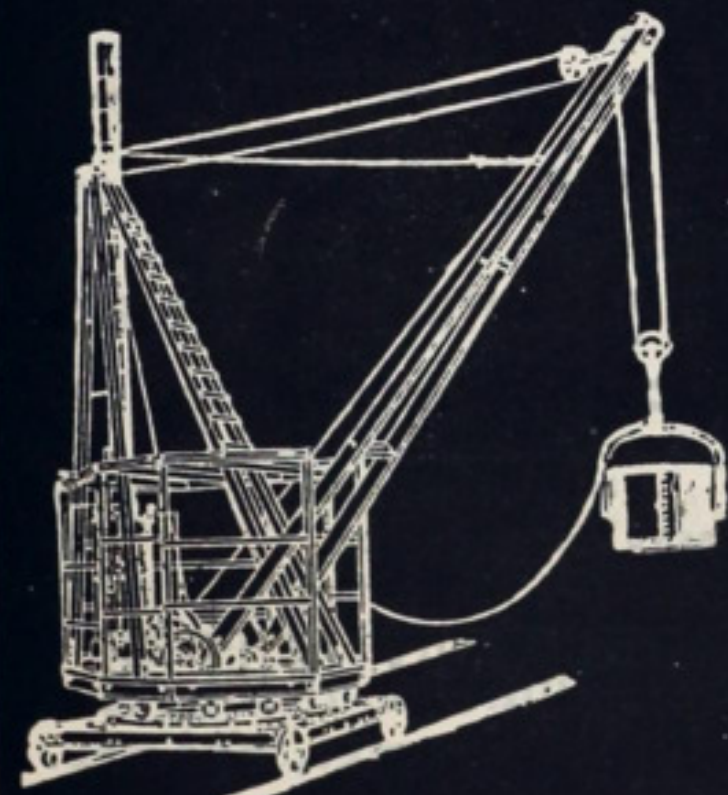
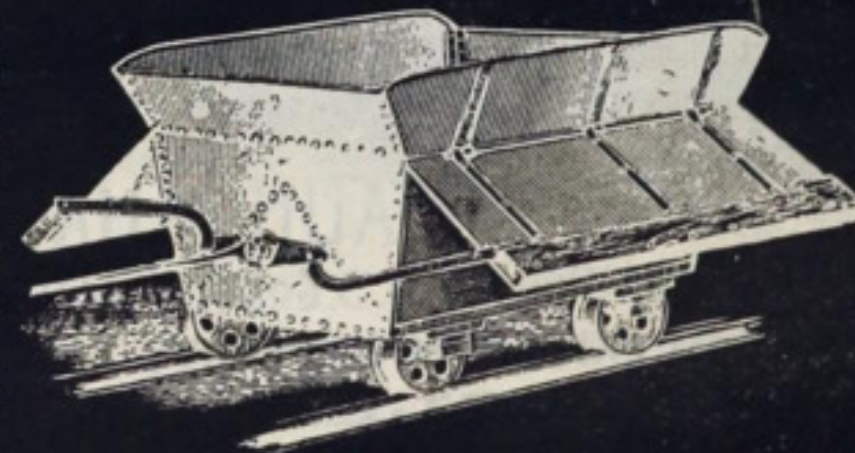
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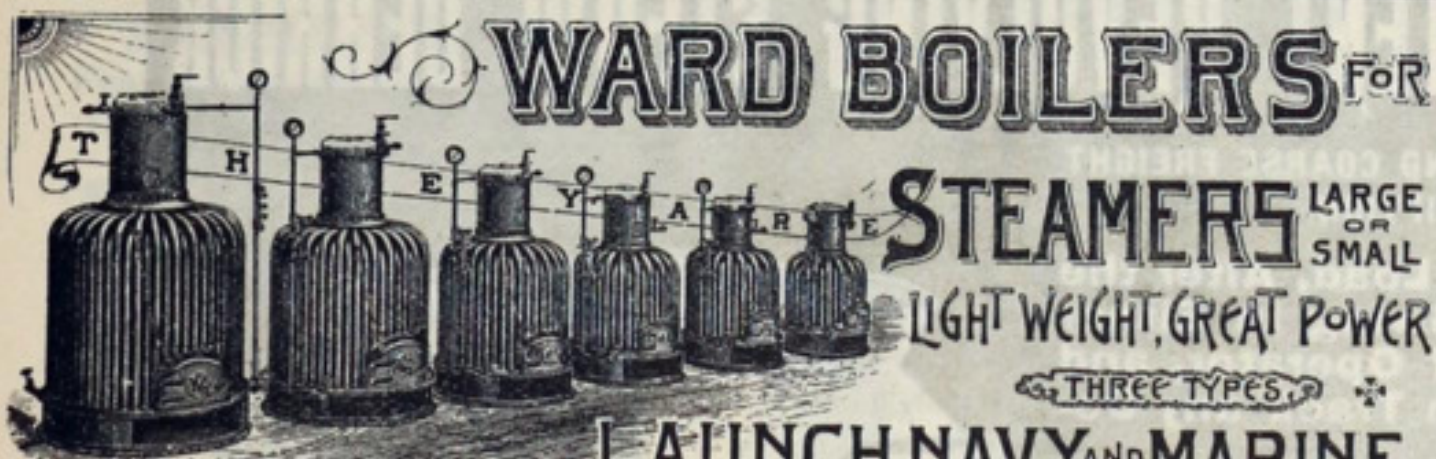


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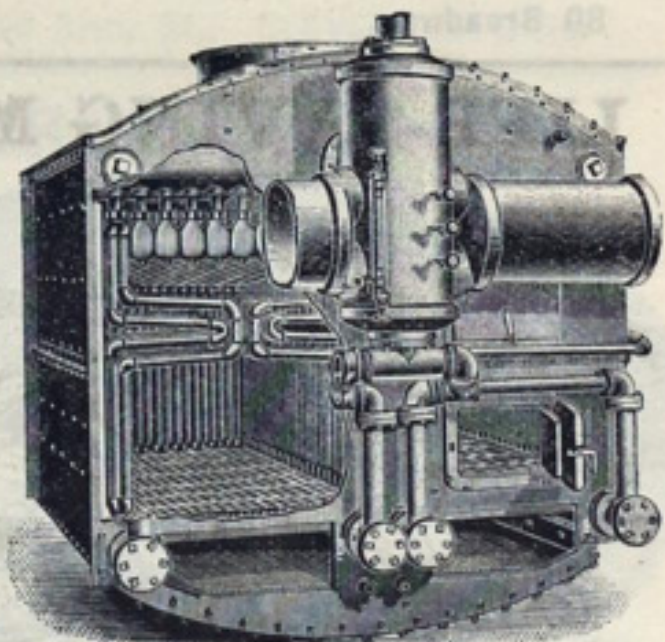
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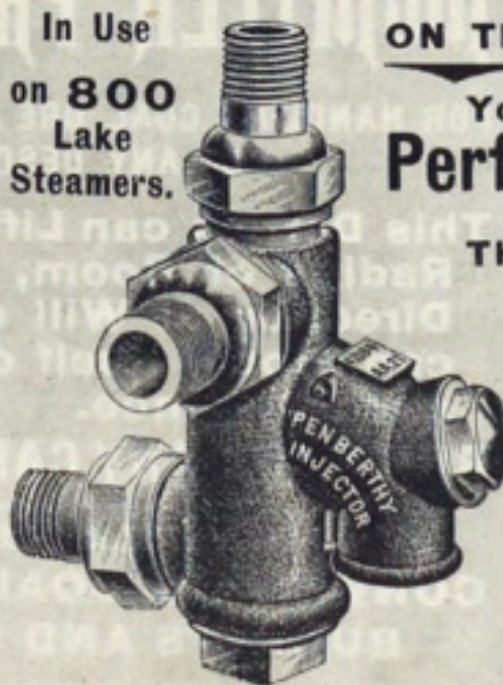
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